

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-260007

(43)Date of publication of application : 03.10.1997

(51)Int.Cl.

H01R 39/18  
H01R 39/00  
H01R 43/12  
H02K 13/00

(21)Application number : 08-072273

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(22)Date of filing : 27.03.1996

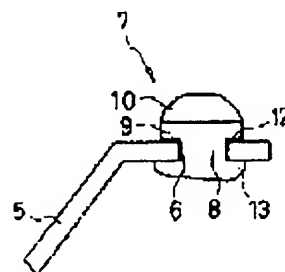
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(54) BRUSH HAVING SLIVER CONTACT POINT AND MANUFACTURE THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a brush having a sliver contact point in which the silver contact point and a contact point part of a brush main body are formed as an electrically integrated structure by boring a hole in a tip flat part of the contact point part standing up from the brush main body, and mechanically calking it by performing spot welding by fitting a leg part of the silver contact point in this hole.

SOLUTION: A tip of a contact point part 5 integrally stood up from a brush main body is formed in a flat part, and a hole 6 is bored. A leg part 8 of a silver contact point 7 is fitted in this hole 6, and spot welding 12 is performed on an under surface of a contact point flange part 9 of the silver contact point 7 contacting with the upper edge of this leg part 8 and a peripheral edge part upper surface of the hole 6, and they are integrally formed by being mechanically calked from the under surface. In the silver contact point 7, a surface of the contact point flange part 9 is coated with silver alloy 10. A brush having a silver contact point which is excellently electrically continued with this and by which there is no possibility of falling-off of the silver contact point 7 can be obtained.



## LEGAL STATUS

[Date of request for examination] 29.06.2001

[Date of sending the examiner's decision of rejection] 09.09.2003

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平9-260007

(43) 公開日 平成9年(1997)10月3日

(51) Int.Cl. <sup>6</sup>	識別記号	庁内整理番号	F I	技術表示箇所
H 0 1 R 39/18			H 0 1 R 39/18	
	39/00		39/00	C
	43/12		43/12	
H 0 2 K 13/00			H 0 2 K 13/00	Q

審査請求 未請求 請求項の数3 O L (全 4 頁)

(21) 出願番号 特願平8-72273

(22) 出願日 平成8年(1996)3月27日

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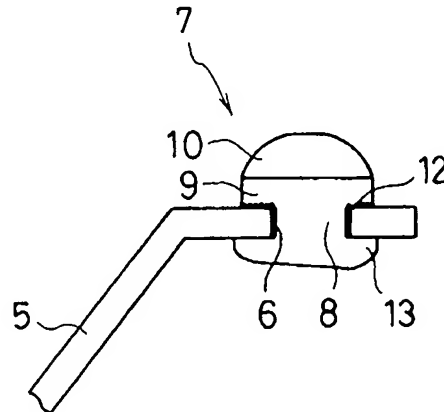
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(54) 【発明の名称】 銀接点付ブラシ及びその製造方法

(57) 【要約】

【課題】 銀接点とブラシ本体の接点部が電氣的に一体構造にでき、かつ銀接点が外部負荷により脱落等することがなく、製造装置の自動化も可能な銀接点付ブラシ及びその製造方法を提供すること。

【解決手段】 ブラシ本体から一体に起立した接点部5の先端平坦部に穿設した孔6に銀製接点7の脚部8を嵌入した後、上下1対の電極により下方の電極が該脚部に接触せず、銀製接点の接点フランジ部9に対向するような状態でスポット溶接し、そのうえで機械的にかしめて銀製接点7と接点部5を一体化することを特徴とする。



## 【特許請求の範囲】

【請求項1】 ブラシ本体と、このブラシ本体から一体に起立した接点部とを有し、該接点部の先端平坦部に穿設した孔に銀製接点の脚部が嵌入されてスポット溶接されたうえで機械的にかしめられて一体化されていることを特徴とする銀接点付ブラシ。

【請求項2】 ブラシ本体から一体に起立した接点部の先端平坦部に穿設した孔に銀製接点の脚部を嵌入した後、上下1対の電極により下方の電極が該脚部に接触せず、銀製接点の接点フランジ部に対向するような状態でスポット溶接し、そのうえで機械的にかしめて銀製接点と接点部を一体化することを特徴とする銀接点付ブラシの製造方法。

【請求項3】 接点部の先端平坦部に穿設する孔をその孔縁が上向きに突出した状態となるようにして設け、この孔縁に銀製接点の脚部側の接点フランジ部の一部が接触して載るように脚部を孔に嵌入した状態でスポット溶接する請求項2記載の銀接点付ブラシの製造方法。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、例えば電気コードの巻取装置等の電気接点部品として使用される銀接点付ブラシ及びその製造方法に関するものである。

## 【0002】

【従来の技術】この種銀接点付ブラシの製造方法としては、図5(A)、(B)に示すようなブラシ本体03から一体に起立した接点部05の先端平坦部に穿設した孔06に銀製接点07の脚部08を嵌入した後、機械的にかしめる、いわゆる銀接点かしめ法がよく知られている。同図において020はブラシ本体03が取り付けられるリール、021はケースカバーで、このカバーにはブラシ01の銀製接点07と接触するコンタクトリング022が取り付けられている。023はリール020の回転中心を示す。しかしながら、この方法は銀製接点07を単にかしめただけであるので、銀接点07と接点部05が電氣的に一体構造になっていない。そのため、導通が悪く、酸化等の恐れがあった。

【0003】一方、このような難点を克服するために、図6に示すような接点部05の先端平坦部上に銀製接点07を載置した状態でスポット溶接する、いわゆる銀接点スポット溶接法が提案された。012はそのスポット溶接部である。しかしながら、この方法は接点07と接点部05が一体構造となり電氣的に安定するという利点があるものの、外部負荷により銀接点07が脱落したり位置ずれが生じるという心配があり、強度的な面で難点があった。しかも、この場合には接点部05の先端平坦部上への載置に際して銀接点07の位置決めが容易でないので、製造装置の自動化にも支障があった。

## 【0004】

【発明が解決しようとする課題】そこでこの発明は、前記のような従来の問題点を解決することができ、銀接点

とブラシ本体の接点部が電氣的に一体構造にでき、かつ銀接点部が外部負荷により脱落等することがなく、製造装置の自動化も可能な銀接点付ブラシ及びその製造方法を提供することを目的とする。

## 【0005】

【課題を解決するための手段】前記目的を達成するため、請求項1の発明の銀接点付ブラシは、ブラシ本体と、このブラシ本体から一体に起立した接点部とを有し、該接点部の先端平坦部に穿設した孔に銀製接点の脚部が嵌入されてスポット溶接されたうえで機械的にかしめられて一体化されていることを特徴とする。

【0006】請求項2の発明の銀接点付ブラシの製造方法は、ブラシ本体から一体に起立した接点部の先端平坦部に穿設した孔に銀製接点の脚部を嵌入した後、上下1対の電極により下方の電極が該脚部に接触せず、銀製接点の接点フランジ部に対向するような状態でスポット溶接し、そのうえで機械的にかしめて銀製接点と接点部を一体化することを特徴とする。

【0007】請求項3の発明の銀接点付ブラシの製造方法は、請求項2において、接点部の先端平坦部に穿設する孔をその孔縁が上向きに突出した状態となるようにして設け、この孔縁に銀製接点の脚部側の接点フランジ部の一部が接触して載るように脚部を孔に嵌入した状態でスポット溶接する。

## 【0008】

【発明の実施の形態】図1はこの発明の一実施形態のコード巻取装置用銀接点付ブラシを電気コードの端部に対して取り付けた状態の平面図、図2は図1のA-A線に沿うブラシ本体の接点部の要部縦断面図である。1は電気コード2の一端部に接続された銀接点付ブラシであり、ブラシ本体3と、このブラシ本体の両側から一体に起立した接点部5からなっている。接点部5の先端は平坦部に形成され、該先端平坦部には孔6が穿設されている。このような接点部5の先端平坦部に孔6が付いたブラシ本体3は、例えばプレス等による打ち抜き加工により形成される。

【0009】ブラシ本体3の孔6には銀製接点7の脚部8が嵌入され、該脚部の上縁と接する銀製接点7の接点フランジ部9の下面とブラシ本体3の孔6の周縁部上面がスポット溶接されたうえ、上下から機械的にかしめられて一体化されている。銀製接点7は接点フランジ部9の上に銀合金10がコーティングされている。12はそのスポット溶接部、13はかしめにより潰された脚部分を示す。

【0010】前記のような銀接点付ブラシ1の製造に際しては、まず、図3に示すようにブラシ本体3の接点部5の先端平坦部に穿設した孔6に銀製接点7の脚部8を嵌入する。孔6は前記プレス等による形成に際し、その孔縁6aが上向きに突出した状態となるようにしておく。すると、脚部8を孔6に嵌入したときに銀製接点7

の脚部8側の接点フランジ部9の一部がこの孔縁6aに接触して載るようになり、従来のスポット溶接法のように接点フランジ部9の全面で接触するようなことがない。

【0011】しかる後、図4に示すようにスポット溶接機の下上1対の電極15、16を銀製接点7に接近させ、スポット溶接することとなるが、この際に前記のように銀製接点7の脚部8側の接点フランジ部9の一部のみが孔縁6aに接触するだけなので、消費電力を小さく、かつ設備費を安くすることができる。試験結果によれば、このような一部接触の場合には全面接触の場合の4万アンペアに対して2万アンペアですむことがわかった。また、溶接も確実である。

【0012】しかも、溶接に際して図4のように下方の電極16が脚部8に接触せず、接点フランジ部9と対向する部分にのみ電流が流れるような配置となるので、接点フランジ部9の下面とブラシ本体3の接点部5の孔6の周縁部上面に対する電流の流れが良好となって、溶接がより確実なものとなる。

【0013】

【発明の効果】この発明は前記のような構成からなり、銀接点とブラシ本体の接点部が電氣的に一体構造となるので、導通のよいものとなる。また、取り付けられた銀接点は、例えば取り付けられるリールの回転による摺動抵抗に対しても強度が強いものとなり、従来のように脱落等する恐れもない。さらに、製造に際しては銀接点の脚部を孔に入れて溶接し、かつかしめればよく、製造装

置の自動化も可能となるという優れた効果がある。

【図面の簡単な説明】

【図1】この発明の一実施形態のコード巻取装置用銀接点付ブラシを電気コードの端部に対して取り付けした状態の平面図である。

【図2】図1のA-A線に沿うブラシ本体の接点部の要部縦断面図である。

【図3】製造工程を示す接点部の要部縦断面図である。

【図4】製造工程を示す接点部の要部縦断面図である。

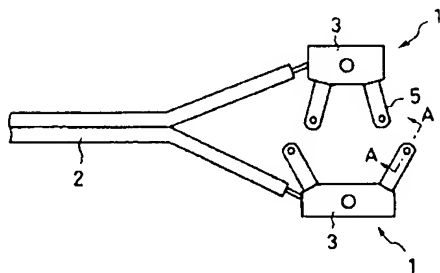
10 【図5】従来の銀接点かしめ法を説明する図面で、(A)はブラシの取り付け状態の要部縦断面図、(B)はブラシ本体の接点部の拡大断面図である。

【図6】従来の銀接点スポット溶接法を説明するブラシ本体の接点部の拡大断面図である。

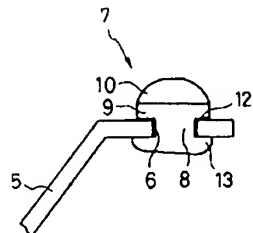
【符号の説明】

- 1 銀接点付ブラシ
- 2 電気コード
- 3 ブラシ本体
- 5 接点部
- 6 孔
- 7 銀製接点
- 8 脚部
- 10 銀合金
- 12 スポット溶接部
- 13 かしめにより潰された脚部分
- 15、16 電極

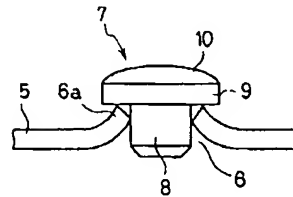
【図1】



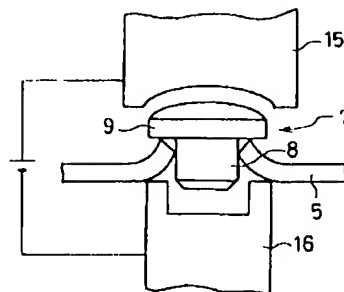
【図2】



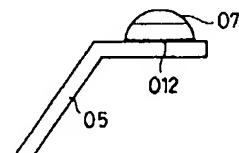
【図3】



【図4】



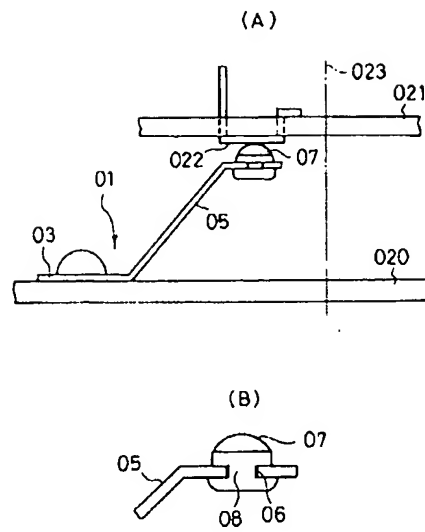
【図5】



(4)

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【図5】



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**Notes**

- 1. Untranslatable words are replaced with asterisks (\*).
- 2. Figures in the figures are not translated and shown as it is.

Translated: 21/37/52 JST 06/30/2006

Priority: Last updated 06/16/2006 / Priority

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**FULL CONTENTS**

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**[Claim(s)]**

[Claim 1] The brush with a silver point of contact characterized by closing whether it is mechanical to the hole which has a main part of a brush, and the contact part which stood up from this main part of a brush to one, and was drilled in the tip flat part of this contact part, and uniting with it after spot welding of the leg of silver points of contact is inserted and carried out.

[Claim 2] After inserting the leg of silver points of contact in the hole drilled in the tip flat part of the contact part which stood up from the main part of a brush to one, The manufacture method of the brush with a silver point of contact which a downward electrode does not contact this leg with the electrode of one pair of upper and lower sides, but carries out spot welding in the state where the contact flange of silver points of contact is countered, and is characterized by being mechanical on it or unifying silver points of contact and a contact part in total.

[Claim 3] The manufacture method of the brush with a silver point of contact according to claim 2 which carries out spot welding of the leg in the state where it inserted in the hole so that it may prepare the hole drilled in the tip flat part of a contact part as that hole edge will be in the state where it projected upward, and a part of contact flange by the side of the leg of silver points of contact may contact and appear in this hole edge.

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**[Detailed Description of the Invention]****[0001]**

[Field of the Invention] This invention relates to the brush with a silver point of contact used, for example as electric point-of-contact parts, such as a winding device of a power cord, and its manufacture method.

**[0002]**

[Description of the Prior Art] After inserting the leg 08 of the silver points of contact 07 in the

hole 06 drilled in the tip flat part of the contact part 05 which stood up to one as the manufacture method of this brush with a \*\*\*\* point of contact from the main part 03 of a brush as shown in drawing 5 (A) and (B), it closes what is called in a silver point of contact which closes whether it is mechanical, and law is known well. The reel by which the main part 03 of a brush is attached 020 in this figure, and 021 are case covers, and the contact ring 022 in contact with the silver points of contact 07 of a brush 01 is attached to this cover. 023 shows the rotation center of a reel 020. However, as for this method, in the silver points of contact 07, since or was only closed, the silver point of contact 07 and the contact part 05 do not have solid construction electrically. Therefore, the flow was bad and there was fear, such as oxidization.

[0003] On the other hand, in order to conquer such a difficulty, what is called a silver point-of-contact spot welding process that carries out spot welding where the silver points of contact 07 are laid on the tip flat part of the contact part 05 as shown in drawing 6 was proposed. 012 is the spot welding part. However, although there was an advantage that this method served as solid construction and a point of contact 07 and the contact part 05 were stabilized electrically as for it, there was a fear of the silver point of contact 07 dropping out by external load, or a position gap arising, and there was a difficulty an intensity field. And in this case, on the occasion of installation of a up to [ the tip flat part of the contact part 05 ], since positioning of the silver point of contact 07 was not easy, there was trouble also in automation of manufacture equipment.

[0004]

[Problem to be solved by the invention] Then, the above conventional problems can be solved, and the contact part of a silver point of contact and the main part of a brush is electrically made to solid construction, and a silver point of contact does not carry out omission etc. by external load, and this invention also aims automation of manufacture equipment at offering a possible brush with a silver point of contact, and its manufacture method.

[0005]

[Means for solving problem] In order to attain said purpose, [ the brush with a silver point of contact of invention of Claim 1 ] It has a main part of a brush, and the contact part which stood up from this main part of a brush to one, and is characterized by closing whether it is mechanical to the hole drilled in the tip flat part of this contact part, and uniting with it, after spot welding of the leg of silver points of contact is inserted and carried out.

[0006] [ the manufacture method of the brush with a silver point of contact invention of Claim 2 ] After inserting the leg of silver points of contact in the hole drilled in the tip flat part of the contact part which stood up from the main part of a brush to one, A downward electrode does not contact this leg with the electrode of one pair of upper and lower sides, but spot welding is carried out in the state where the contact flange of silver points of contact is countered, and it



is further mechanical or is characterized by unifying silver points of contact and a contact part in total.

[0007] [ the manufacture method of the brush with a silver point of contact invention of Claim 3 ] In Claim 2, as that hole edge will be in the state where it projected upward, it prepares the hole drilled in the tip flat part of a contact part, and spot welding of the leg is carried out in the state where it inserted in the hole so that a part of contact flange by the side of the leg of silver points of contact may contact and appear in this hole edge.

[0008]

[Mode for carrying out the invention] The top view in the state where drawing 1 made the pair the brush with the silver point of contact for code winding devices of one embodiment of this invention, and attached it to the end of a power cord, and drawing 2 are the important section longitudinal sections of the contact part of the main part of a brush which meets the A-A line of drawing 1. 1 is the brush with a silver point of contact connected to the end part of the power cord 2, and consists of a contact part 5 which stood up to one from the both sides of the main part 3 of a brush, and this main part of a brush. The tip of the contact part 5 is formed in a flat part, and the hole 6 is drilled by this tip flat part. The main part 3 of a brush with which the hole 6 stuck to the tip flat part of such a contact part 5 is formed, for example of punch processing by a press etc.

[0009] The leg 8 of the silver points of contact 7 is inserted in the hole 6 of the main part 3 of a brush, and after spot welding of the undersurface of the contact flange 9 of the silver points of contact 7 and the periphery part upper surface of the hole 6 of the main part 3 of a brush adjacent to the superior border of this leg is carried out, from the upper and lower sides, it is closed whether it is mechanical and it is unified. As for the silver points of contact 7, the silver alloy 10 is coated on the contact flange 9. 12 -- the spot welding part -- it vomits 13 -- making -- a part for the crushed leg is shown.

[0010] When manufacturing the above brushes 1 with a silver point of contact, the leg 8 of the silver points of contact 7 is inserted in the hole 6 first drilled in the tip flat part of the contact part 5 of the main part 3 of a brush as shown in drawing 3. It is made for a hole 6 to be in the state where the hole edge 6a projected upward, on the occasion of formation by said press etc. It seems that then, a part of contact flange 9 by the side of the leg 8 of the silver points of contact 7 contacts this hole edge 6a, and it comes to appear when the leg 8 is inserted in a hole 6, and it does not contact all over the contact flange 9 like the conventional spot welding process.

[0011] Although the electrode 15 of one pair of upper and lower sides of a spot welder and 16 will be made to approach the silver points of contact 7 as shown in drawing 4 after an appropriate time and spot welding will be carried out In this case, since a part of contact flange 9 by the side of the leg 8 of the silver points of contact 7 only contacts a hole edge 6a as

mentioned above, it is small in power consumption, and the cost of equipment can be made cheap. According to the test result, it such turned out that is ended at 20,000A to 40,000A in complete contact in part in contact. Moreover, welding is also trustworthy.

[0012] And since the downward electrode 16 does not contact the leg 8 like drawing 4 when welding but it becomes the contact flange 9 and arrangement that current flows only into the portion which counters The flow of the current to the undersurface of the contact flange 9 and the periphery part upper surface of the hole 6 of the contact part 5 of the main part 3 of a brush becomes good, and welding will become more positive.

[0013]

[Effect of the Invention] Since this invention consists of the above composition and the contact part of a silver point of contact and the main part of a brush serves as solid construction electrically, it becomes the good thing of a flow. Moreover, intensity will become strong also to the sliding resistance by rotation of the reel attached, for example, and the attached silver point of contact will not have a possibility of carrying out omission etc. like before, either.

Furthermore, there is an outstanding effect that the leg of a silver point of contact is put in and welded to a hole when manufacturing, and \*\*\*\*\* is good, and automation of manufacture equipment is also attained.

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#### [Brief Description of the Drawings]

[Drawing 1] It is a top view in the state where made the brush with the silver point of contact for code winding devices of one embodiment of this invention into the pair, and it was attached to the end of a power cord.

[Drawing 2] It is the important section longitudinal section of the contact part of the main part of a brush which meets the A-A line of drawing 1 .

[Drawing 3] It is the important section longitudinal section of a contact part showing a manufacturing process.

[Drawing 4] It is the important section longitudinal section of a contact part showing a manufacturing process.

[Drawing 5] With the conventional silver point of contact or the Drawings which close and explain law, (A) is the important section longitudinal section of an attachment state of a brush, and (B) is expanded sectional view \*\*\*\* of the contact part of the main part of a brush.

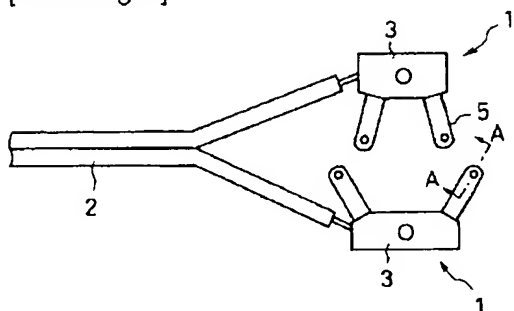
[Drawing 6] It is the expanded sectional view of the contact part explaining the conventional silver point-of-contact spot welding process of the main part of a brush.

#### [Explanations of letters or numerals]

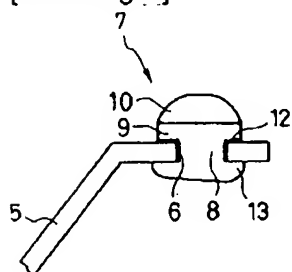
1 Brush with Silver Point of Contact

- 2 Power Cord
  - 3 Main Part of Brush
  - 5 Contact Part
  - 6 Hole
  - 7 Silver Point of Contact
  - 8 Leg
  - 10 Silver Alloy
  - 12 Spot Welding Part
  - 13 A Part for Leg Crushed by \*\*\*\*\*
  - 15, 16 Electrode
- 

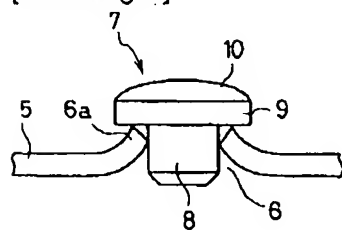
[Drawing 1]



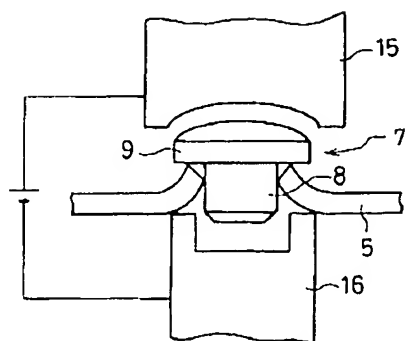
[Drawing 2]



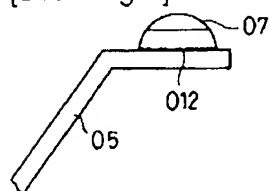
[Drawing 3]



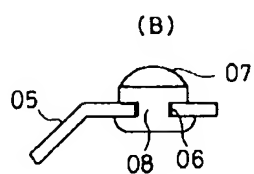
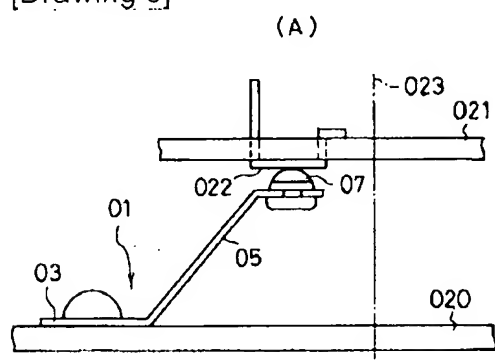
[Drawing 4]



[Drawing 6]



[Drawing 5]



[Translation done.]